Free Flight Phase 1 (FFP1)

FAA program

- **Achieve limited deployment of five sets of tools by end of 2002**
  - **Collaborative Decision Making, User Request Evaluation Tool, Traffic Management Advisor, CTAS Terminal, & Surface Movement Advisor**
- **Provide benefits to National Airspace System (NAS) users and to service providers while maintaining/exceeding current levels of safety**

Free Flight Phase 2 (FFP2)

FAA program

- **Build upon successes of FFP1 & implement 'best practices' to introduce new capabilities from 2003 - 2005**
- **Facilitate airspace initiatives that will alleviate congestion and provide greater access to the NAS**
- **Use incremental, spiral development processes**

Overview of Validation Activities

Safe Flight 21 (SF-21)

FAA program

- **Government & industry collaborative effort**
- **Operational evaluations: Ohio River Valley and Alaska Capstone**
- **Evaluate and deploy nine RTCA operational enhancements to move NAS into 21st century**
  - **Weather and Other Information in the Cockpit**
  - **Cost-Effective CFIT Avoidance**
  - **Improved Terminal Operations in Low Visibility**
  - **Enhanced See and Avoid**
  - **Enhanced En Route Air-to-Air Operations**
  - **Improved Surface Navigation for the Pilot**
  - **Enhanced Surface Surveillance for the Controller**
  - **ADS-B Surveillance in Non-Radar Airspace**
  - **ADS-B Separation Standards**

Operational Evolution Plan (OEP):
Evaluation and Demonstration of Improvements

FAA program

- **Based on operational improvements identified for free flight**
  - **Born out of unprecedented summer 2000 delays**
  - **Focused on meeting demands for to 2010**
- **Maintain safety, increase capacity, & manage delays**
- **Maintain consensus on Government and airline initiatives**
- **Conduct a series of analyses, including fast time and real-time HITL exercises, to measure performance of the NAS (FY02-FY05)**
  - **Leverage on-going work and define incremental simulation exercises**
  - **Perform a "Day in the NAS" full scale end-to-end simulation to represent collection of improvements as if it were 2010 (FY05)**

Virtual Airspace Modeling and Simulation (VAMS)

NASA program

- **Program runs from FY2002 through FY2006**
- **Improve capacity and reliability of the current NAS system**
  - **Accelerate development of selected technologies**
  - **Establish foundations for the air transportation system of the future**
  - **Accelerate development of selected advanced concepts**

Distributed Air-Ground Traffic Management (DAG-TM)

NASA program

- **Evaluate concepts using gate-to-gate analysis for NAS operations beyond 2015**
- **Enhance user flexibility/efficiency and increase system capacity without adversely affecting system safety or restricting user accessibility to the NAS**